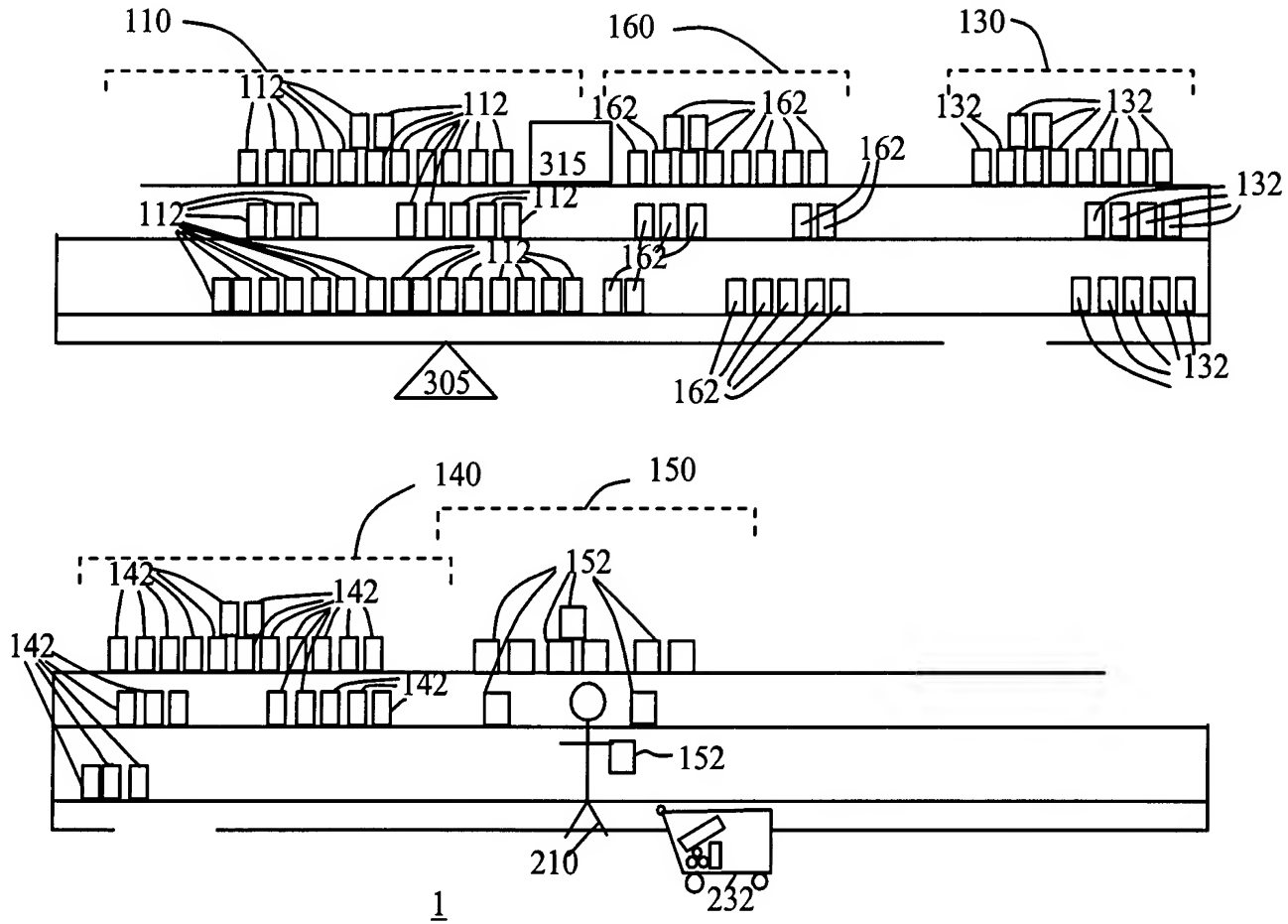

110
160
130
112
112
162
162
132
132
315
162
132
112
112
112
162
305
162
132
140
150
142
142
152
142
142
152
210
232
1

Fig. 1A

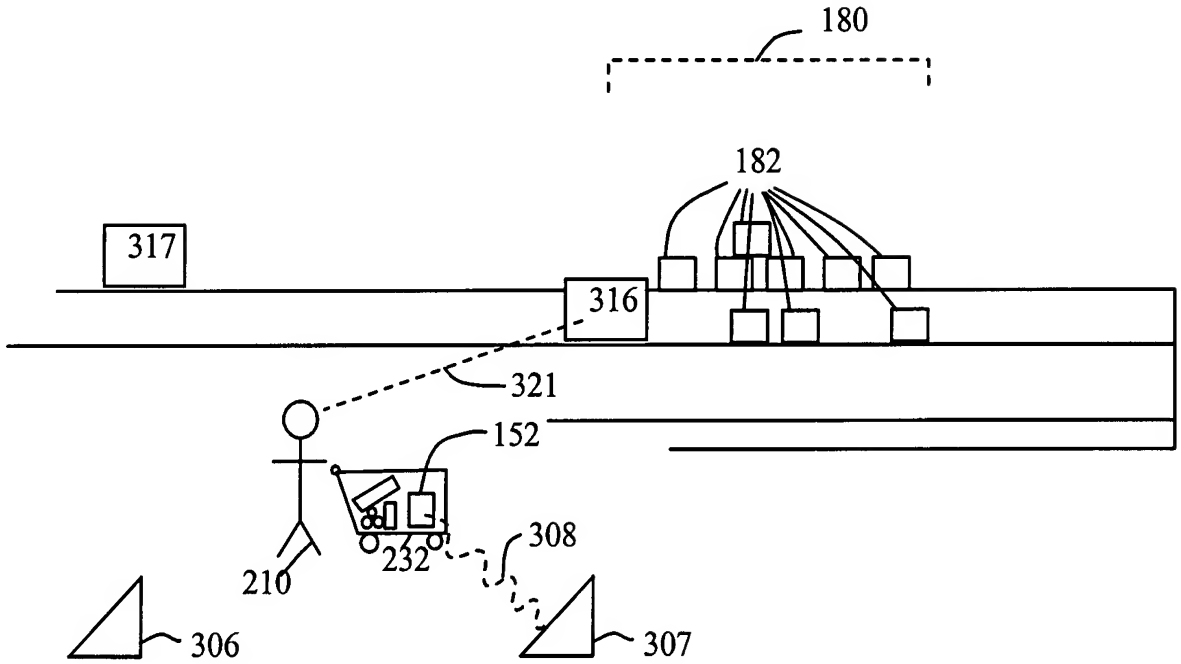
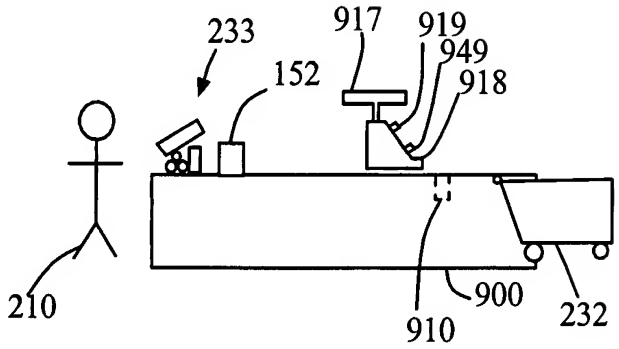
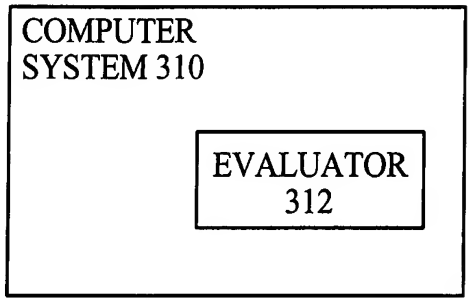


Fig. 1B


233
917
919
949
152
918
210
910
900
232


COMPUTER
SYSTEM 310
EVALUATOR
312

1

Fig. 1C

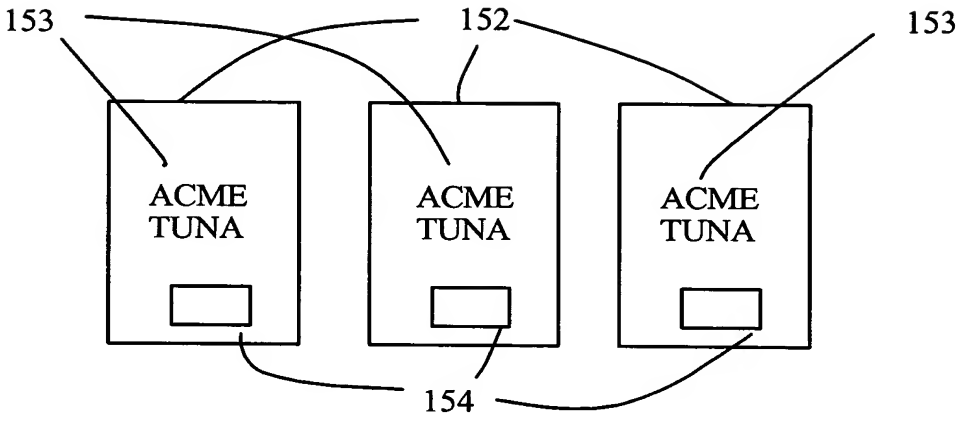


Fig. 2

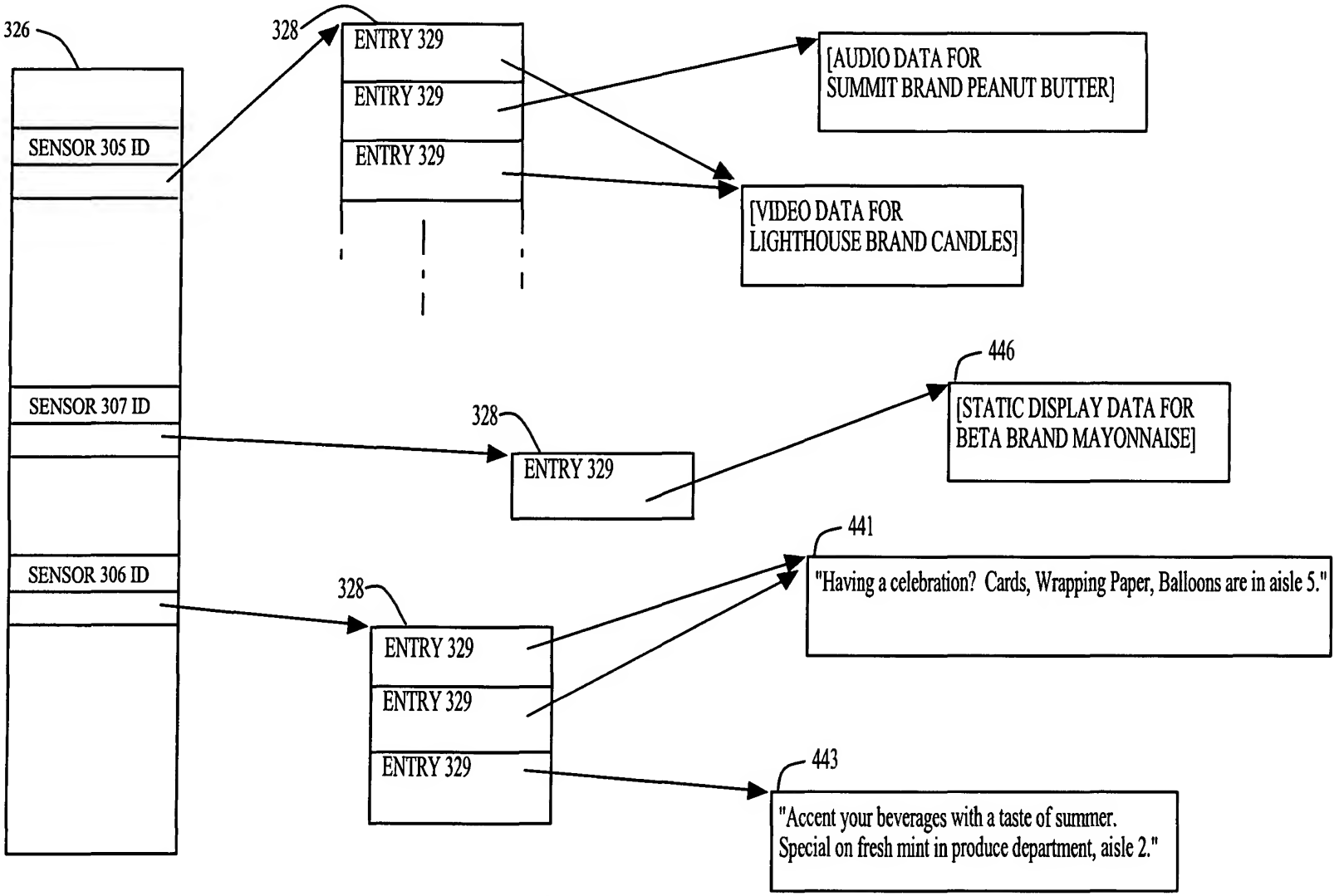

326
328
ENTRY 329
ENTRY 329
ENTRY 329
SENSOR 305 ID
[AUDIO DATA FOR
SUMMIT BRAND PEANUT BUTTER]
[VIDEO DATA FOR
LIGHTHOUSE BRAND CANDLES]
446
SENSOR 307 ID
328
ENTRY 329
[STATIC DISPLAY DATA FOR
BETA BRAND MAYONNAISE]
441
SENSOR 306 ID
"Having a celebration? Cards, Wrapping Paper, Balloons are in aisle 5."
328
ENTRY 329
ENTRY 329
ENTRY 329
443
"Accent your beverages with a taste of summer.
Special on fresh mint in produce department, aisle 2."

Fig. 3

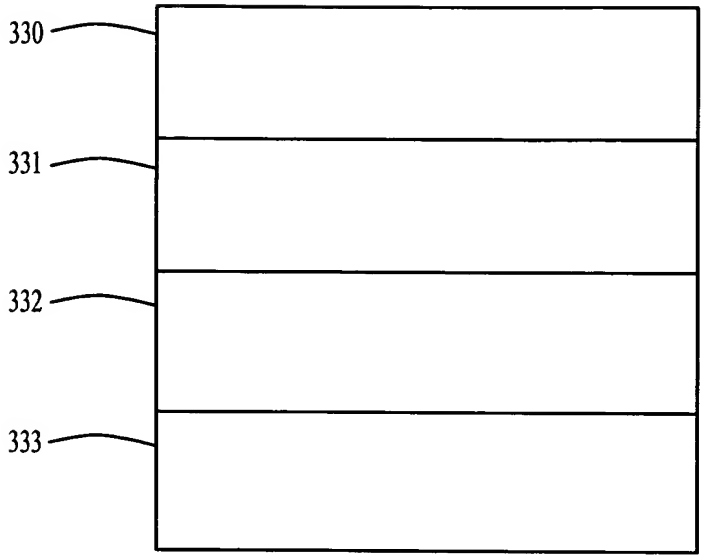


Fig. 4

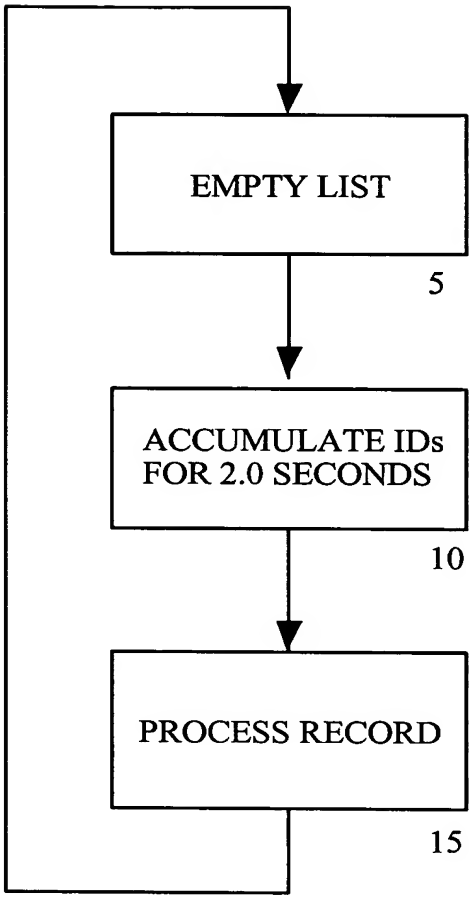

EMPTY LIST
5
ACCUMULATE IDs
FOR 2.0 SECONDS
10
PROCESS RECORD
15

Fig. 5

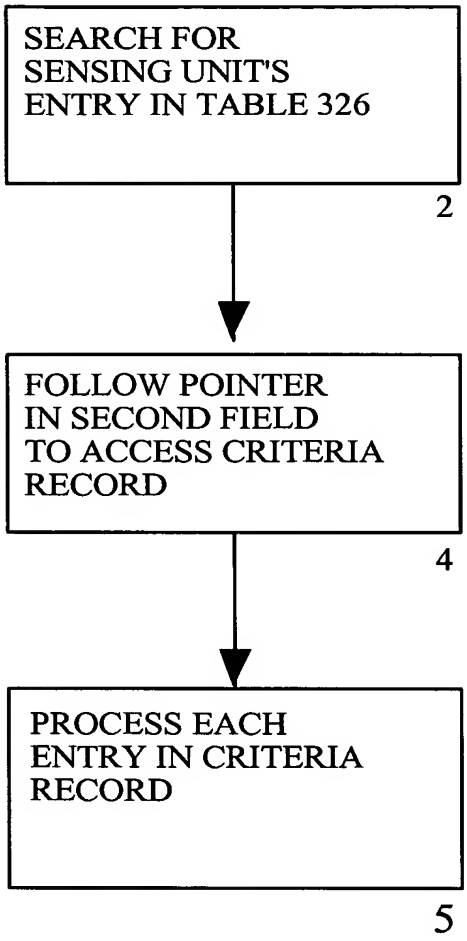

SEARCH FOR SENSING UNIT'S ENTRY IN TABLE 326
2
FOLLOW POINTER IN SECOND FIELD TO ACCESS CRITERIA RECORD
4
PROCESS EACH ENTRY IN CRITERIA RECORD
5

Fig. 6

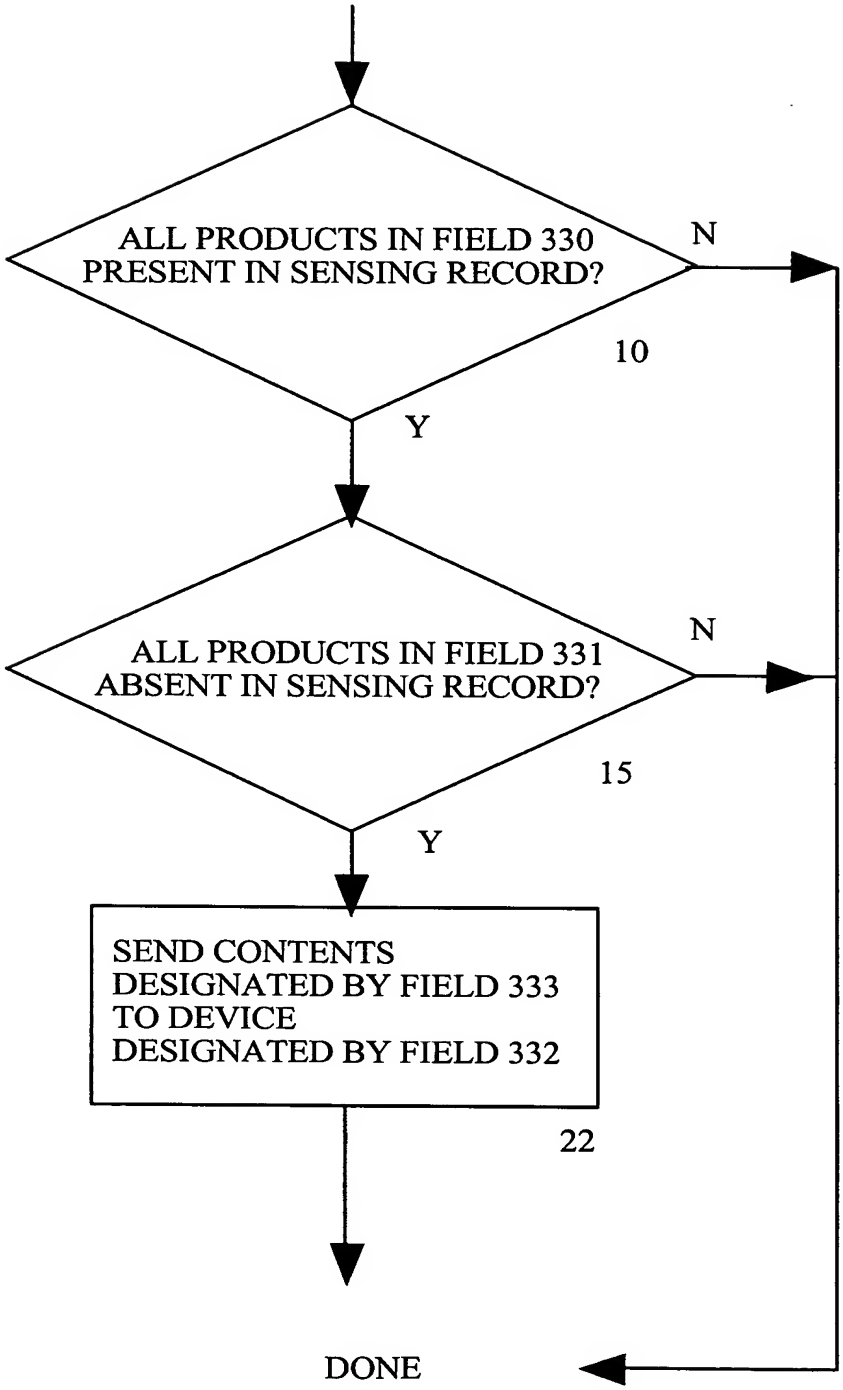

ALL PRODUCTS IN FIELD 330 PRESENT IN SENSING RECORD?
N
10
Y
ALL PRODUCTS IN FIELD 331 ABSENT IN SENSING RECORD?
N
15
Y
SEND CONTENTS DESIGNATED BY FIELD 333 TO DEVICE DESIGNATED BY FIELD 332
22
DONE

FIG. 7

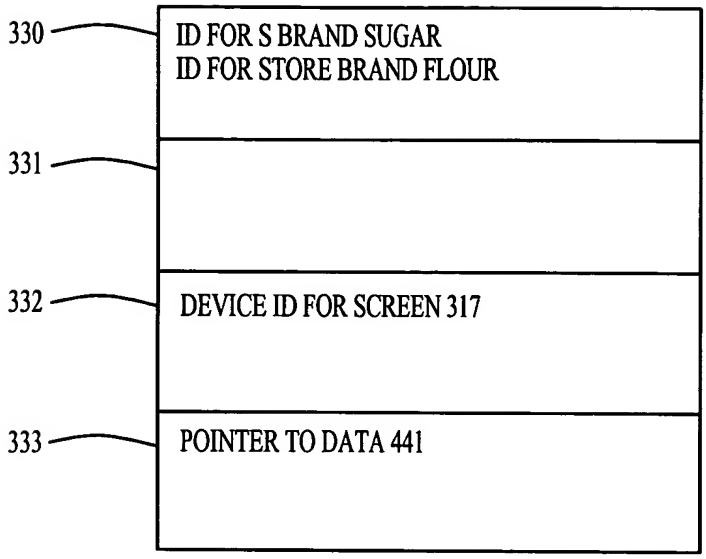

330
ID FOR S BRAND SUGAR
ID FOR STORE BRAND FLOUR
331
332
DEVICE ID FOR SCREEN 317
333
POINTER TO DATA 441

Fig. 8

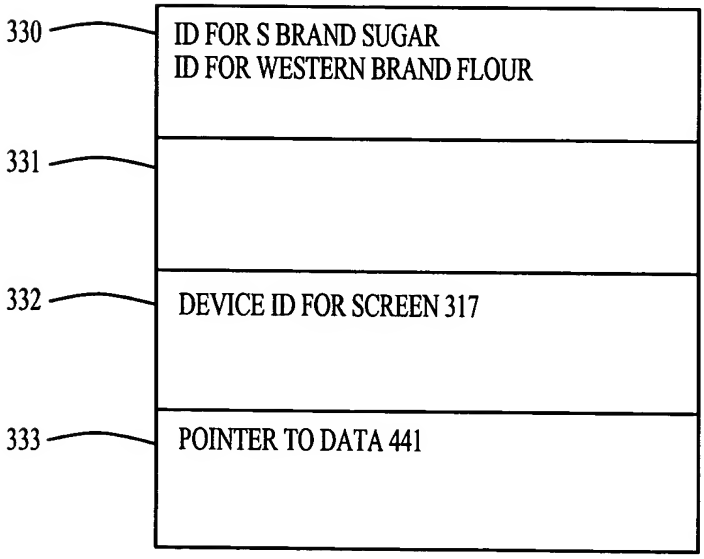

330
ID FOR S BRAND SUGAR
ID FOR WESTERN BRAND FLOUR
331
332
DEVICE ID FOR SCREEN 317
333
POINTER TO DATA 441

Fig. 9

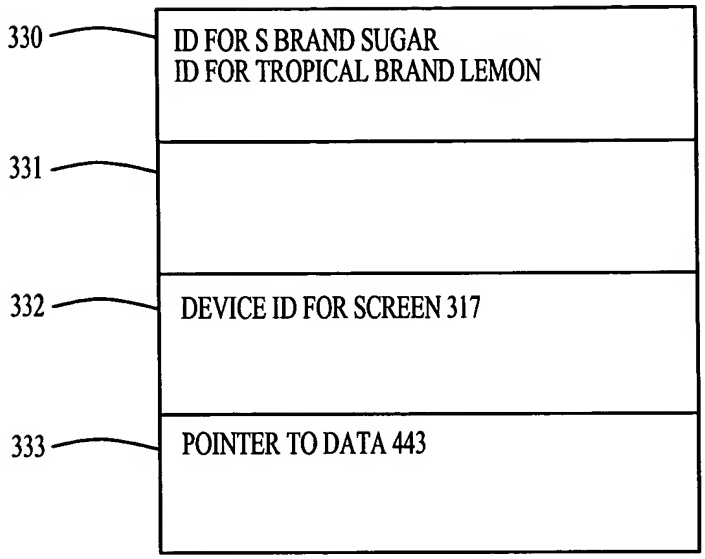

330
ID FOR S BRAND SUGAR
ID FOR TROPICAL BRAND LEMON
331
332
DEVICE ID FOR SCREEN 317
333
POINTER TO DATA 443

Fig. 10

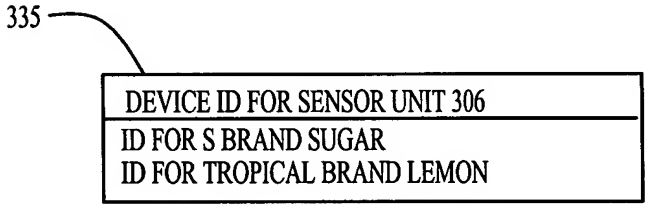
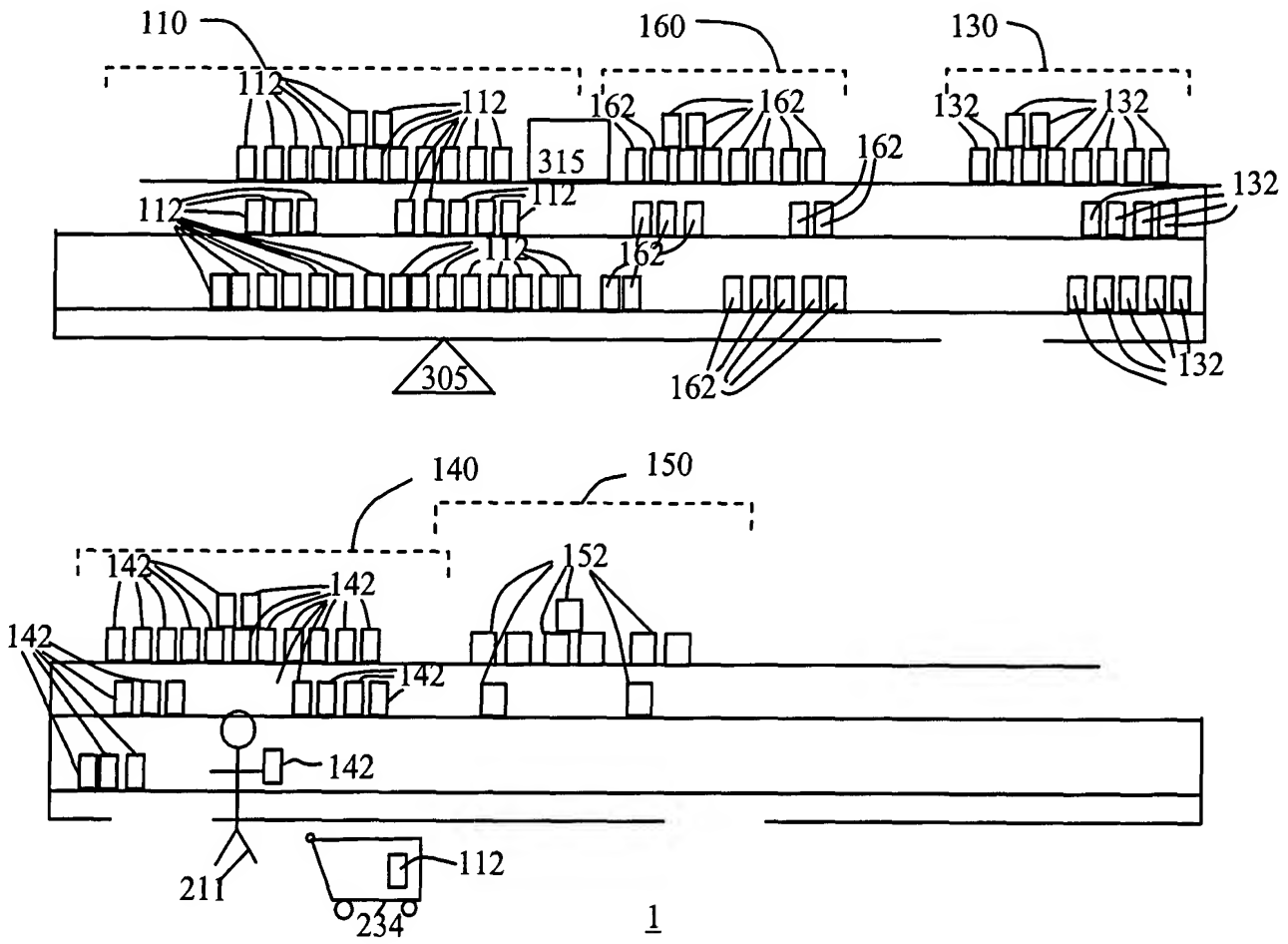

335
DEVICE ID FOR SENSOR UNIT 306
ID FOR S BRAND SUGAR
ID FOR TROPICAL BRAND LEMON

Fig. 12


110
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315
162
132
112
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112
162
305
162
132
140
150
142
152
142
142
142
142
211
112
234
1

Fig. 11A

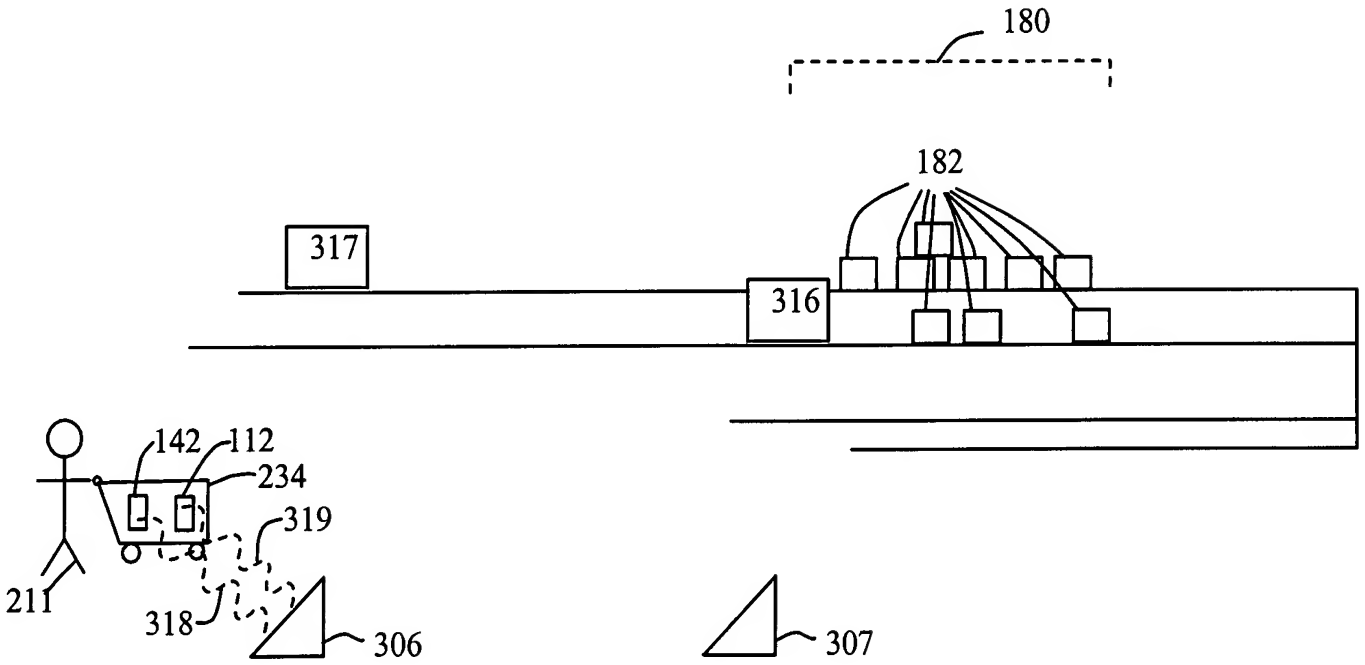
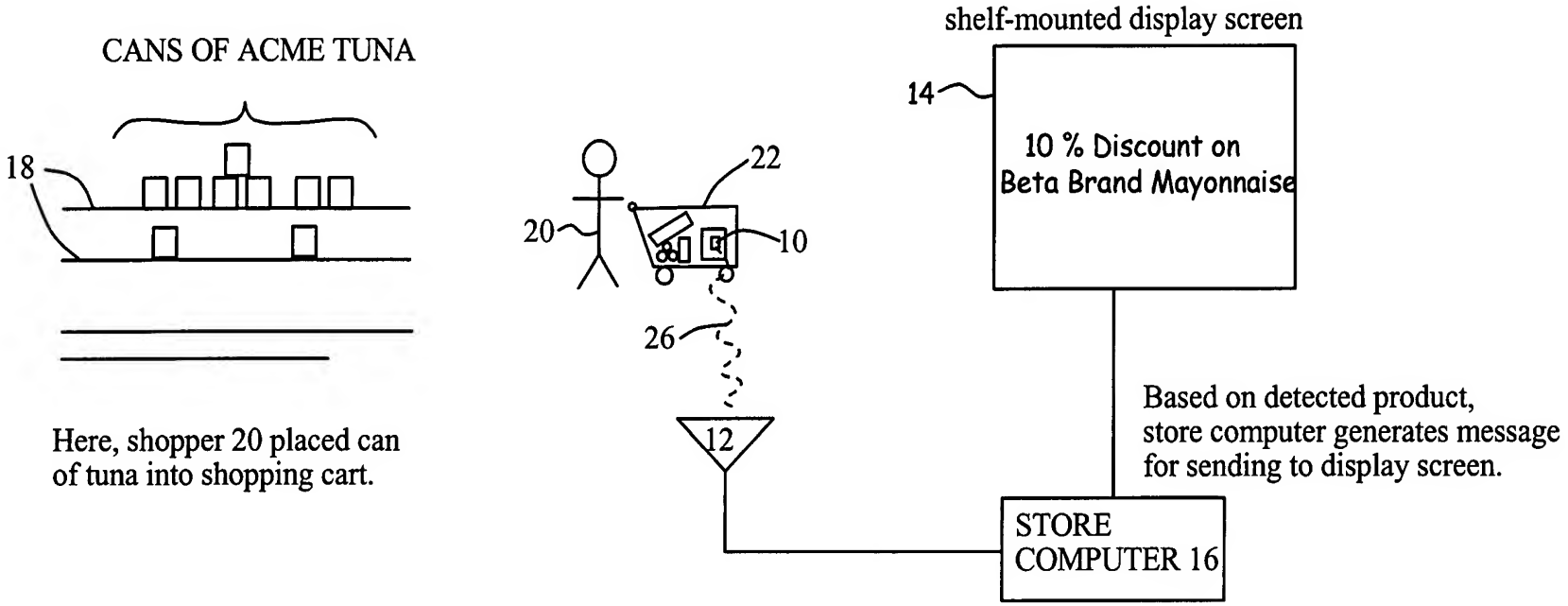


Fig. 11B


CANS OF ACME TUNA
18
Here, shopper 20 placed can of tuna into shopping cart.
shelf-mounted display screen
14
10 % Discount on Beta Brand Mayonnaise
22
20
10
26
12
Based on detected product, store computer generates message for sending to display screen.
STORE COMPUTER 16
Later, at a different point in store, senson 12 detects RFID transmitted by can of tuna.

2

Fig. 13

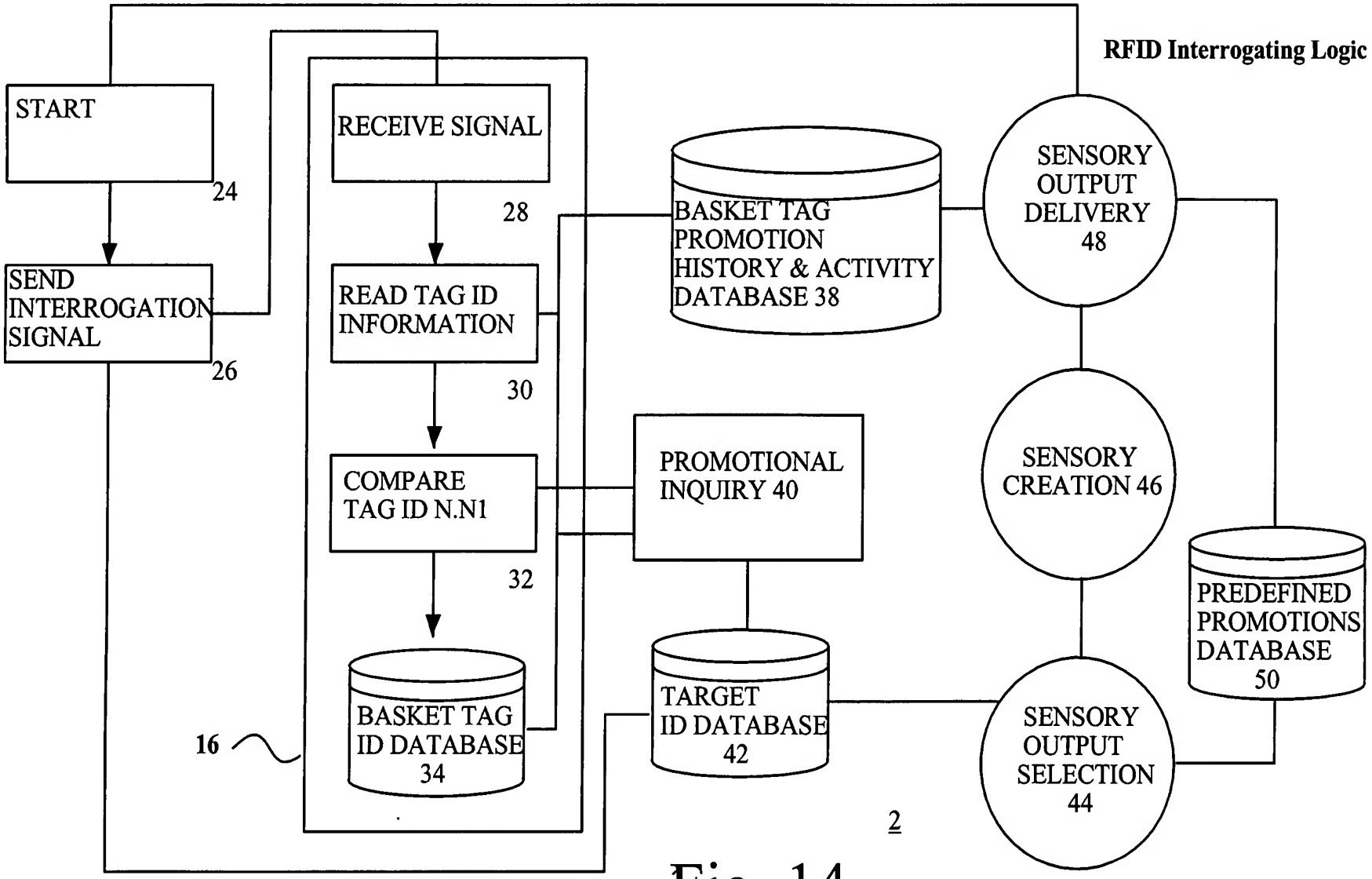

RFID Interrogating Logic
START
24
SEND INTERROGATION SIGNAL
26
RECEIVE SIGNAL
28
READ TAG ID INFORMATION
30
COMPARE TAG ID N.N1
32
BASKET TAG ID DATABASE 34
16
BASKET TAG PROMOTION HISTORY & ACTIVITY DATABASE 38
PROMOTIONAL INQUIRY 40
TARGET ID DATABASE 42
SENSORY OUTPUT DELIVERY 48
SENSORY CREATION 46
SENSORY OUTPUT SELECTION 44
PREDEFINED PROMOTIONS DATABASE 50
2

Fig. 14

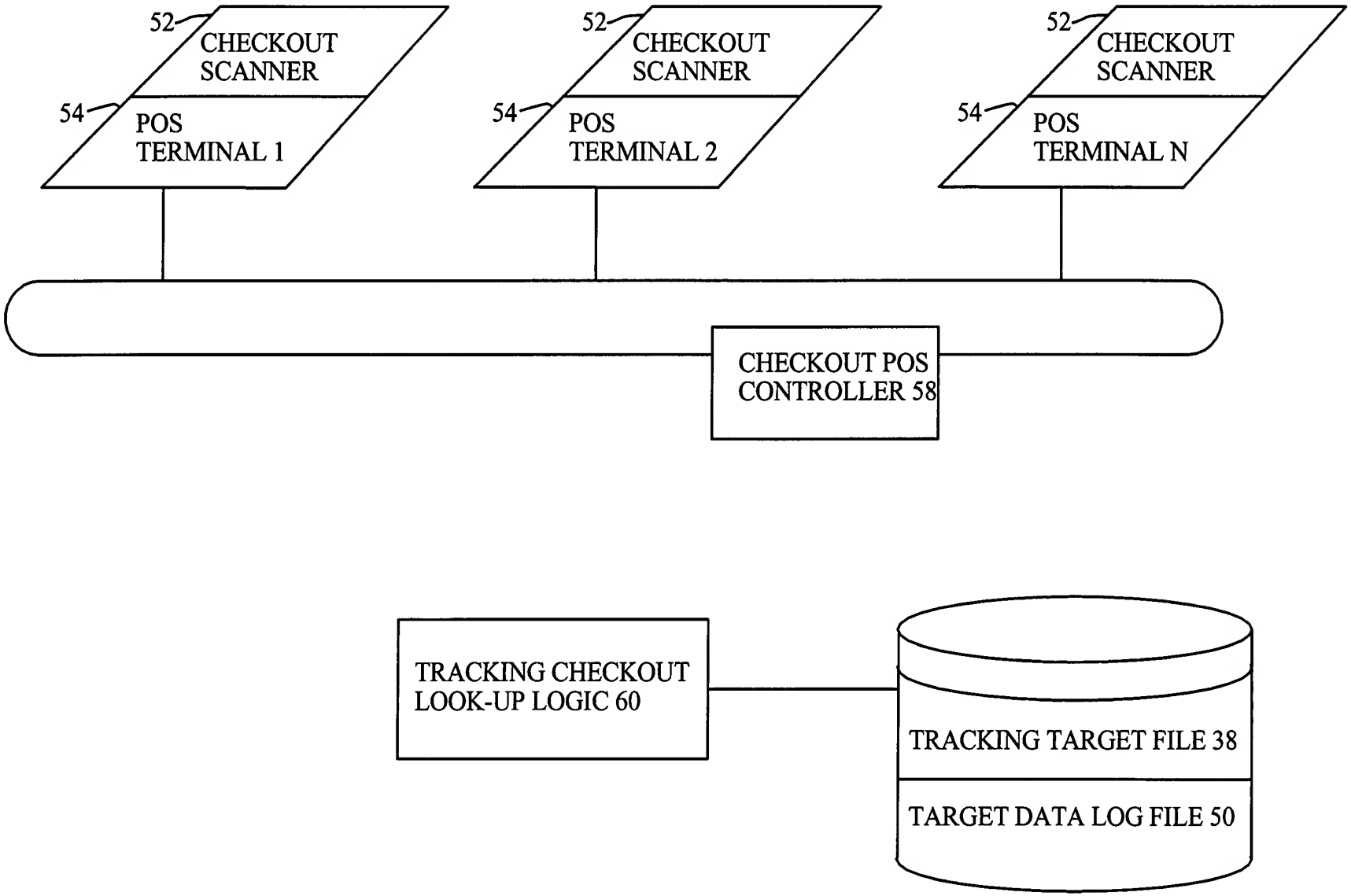

52
CHECKOUT SCANNER
54
POS TERMINAL 1
52
CHECKOUT SCANNER
54
POS TERMINAL 2
52
CHECKOUT SCANNER
54
POS TERMINAL N
CHECKOUT POS CONTROLLER 58
TRACKING CHECKOUT LOOK-UP LOGIC 60
TRACKING TARGET FILE 38
TARGET DATA LOG FILE 50

Fig. 15

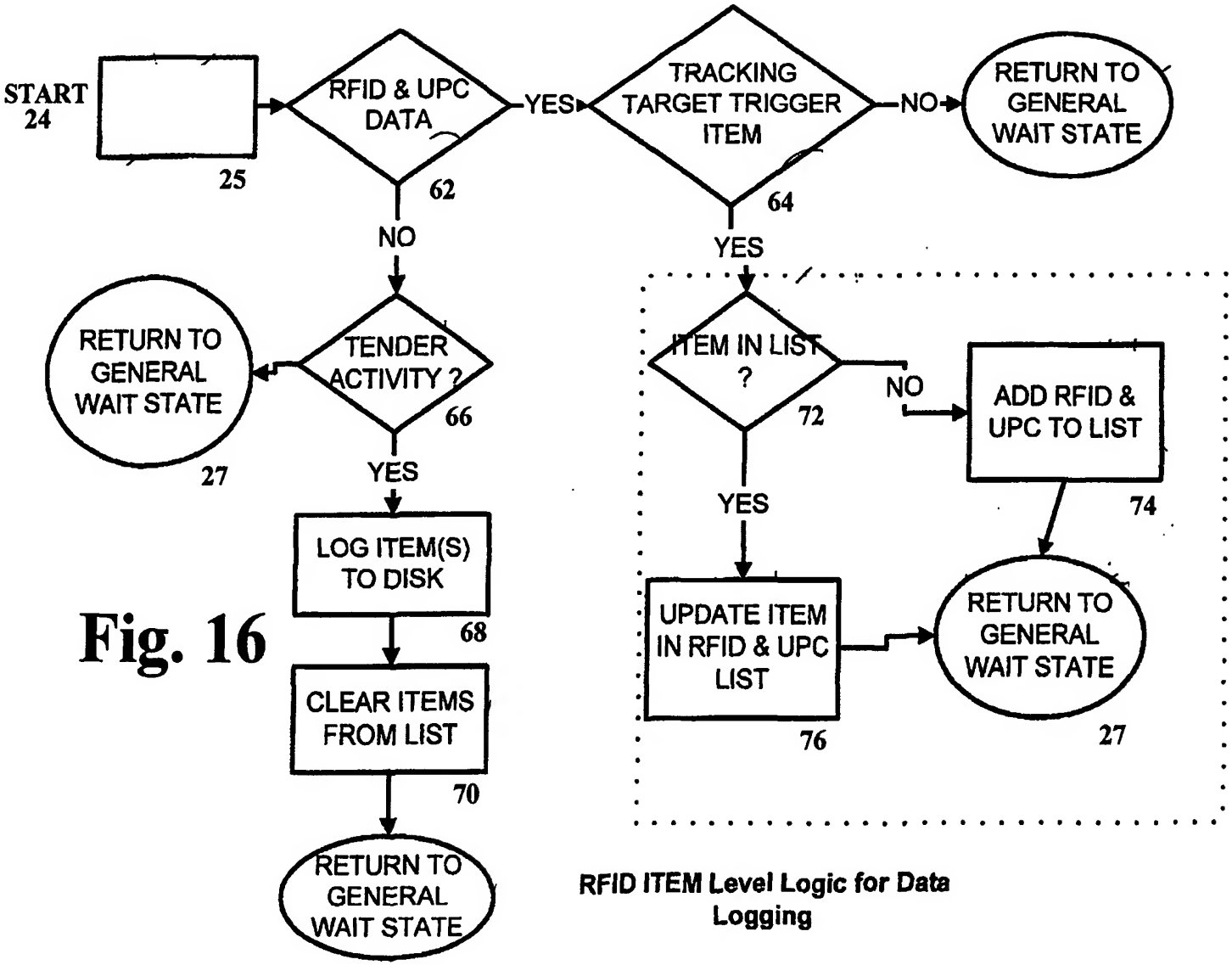


Fig. 16

RFID ITEM Level Logic for Data Logging

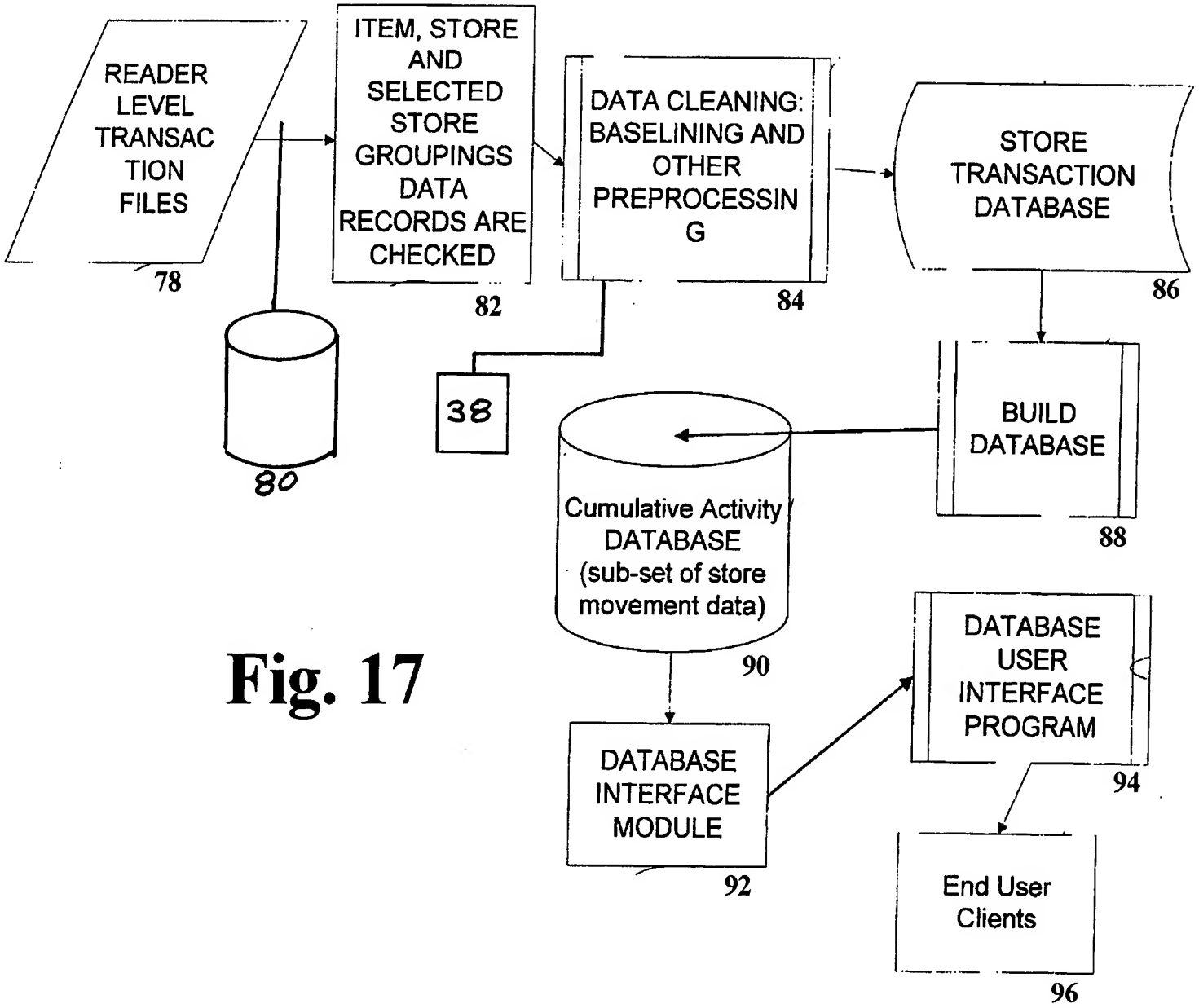

READER LEVEL TRANSAC TION FILES
78
ITEM, STORE AND SELECTED STORE GROUPINGS DATA RECORDS ARE CHECKED
82
DATA CLEANING: BASELINING AND OTHER PREPROCESSIN G
84
STORE TRANSACTION DATABASE
86
80
38
BUILD DATABASE
88
Cumulative Activity DATABASE (sub-set of store movement data)
90
DATABASE USER INTERFACE PROGRAM
94
DATABASE INTERFACE MODULE
92
End User Clients
96

Fig. 17

Fig. 18

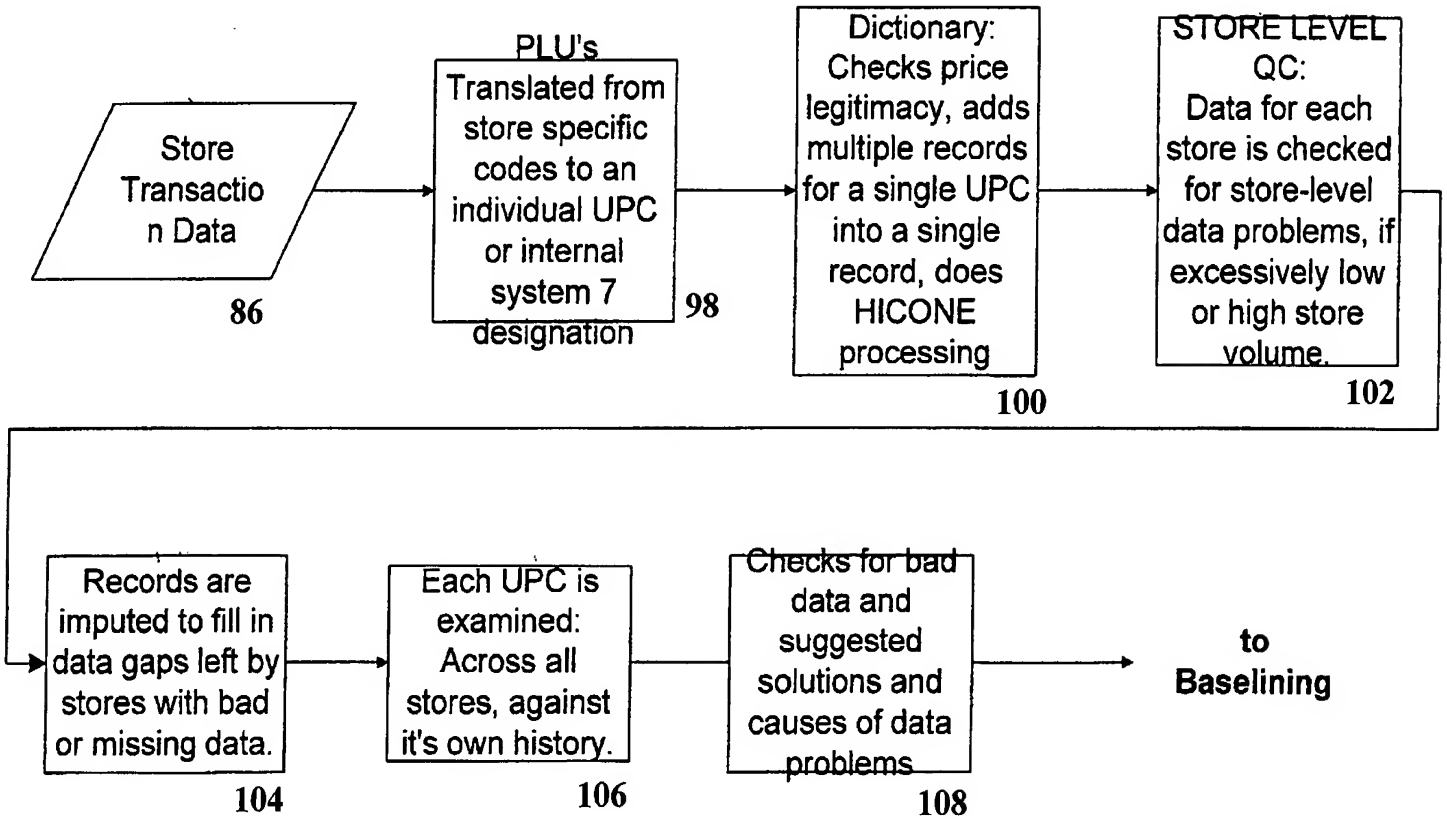
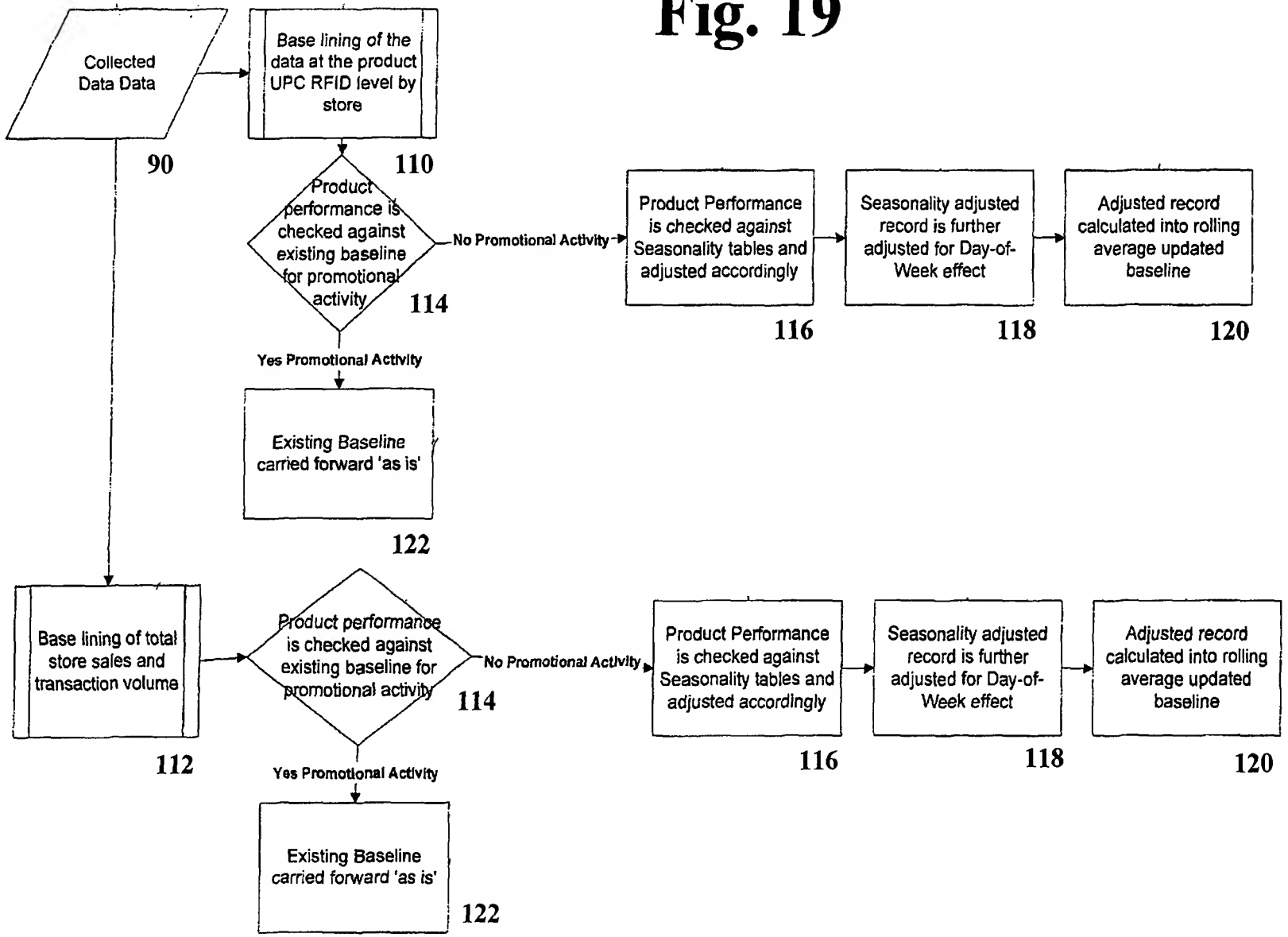

Store Transactio n Data
86
PLU's Translated from store specific codes to an individual UPC or internal system 7 designation
98
Dictionary: Checks price legitimacy, adds multiple records for a single UPC into a single record, does HICONE processing
100
STORE LEVEL QC: Data for each store is checked for store-level data problems, if excessively low or high store volume.
102
Records are imputed to fill in data gaps left by stores with bad or missing data.
104
Each UPC is examined: Across all stores, against it's own history.
106
Checks for bad data and suggested solutions and causes of data problems
108
to Baselining

Fig. 19


Collected Data Data
90
Base lining of the data at the product UPC RFID level by store
110
Product performance is checked against existing baseline for promotional activity
114
No Promotional Activity
Product Performance is checked against Seasonality tables and adjusted accordingly
116
Seasonality adjusted record is further adjusted for Day-of-Week effect
118
Adjusted record calculated into rolling average updated baseline
120
Yes Promotional Activity
Existing Baseline carried forward 'as is'
122
Base lining of total store sales and transaction volume
112
Product performance is checked against existing baseline for promotional activity
114
No Promotional Activity
Product Performance is checked against Seasonality tables and adjusted accordingly
116
Seasonality adjusted record is further adjusted for Day-of-Week effect
118
Adjusted record calculated into rolling average updated baseline
120
Yes Promotional Activity
Existing Baseline carried forward 'as is'
122

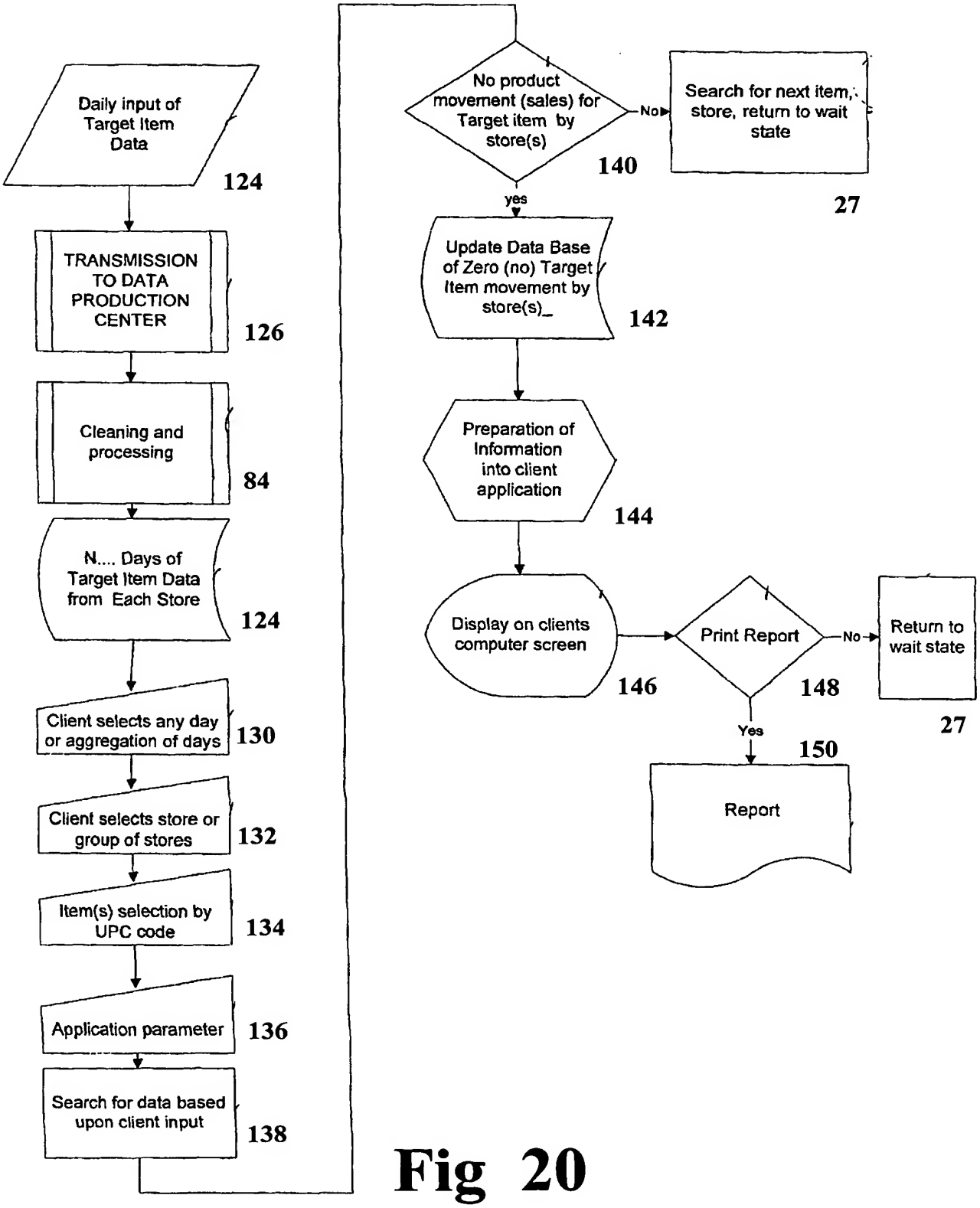

Daily input of Target Item Data
124
TRANSMISSION TO DATA PRODUCTION CENTER
126
Cleaning and processing
84
N.... Days of Target Item Data from Each Store
124
Client selects any day or aggregation of days
130
Client selects store or group of stores
132
Item(s) selection by UPC code
134
Application parameter
136
Search for data based upon client input
138
No product movement (sales) for Target item by store(s)
140
No
Search for next item, store, return to wait state
27
yes
Update Data Base of Zero (no) Target Item movement by store(s)_
142
Preparation of Information into client application
144
Display on clients computer screen
146
Print Report
148
No
Return to wait state
27
Yes
150
Report

Fig 20

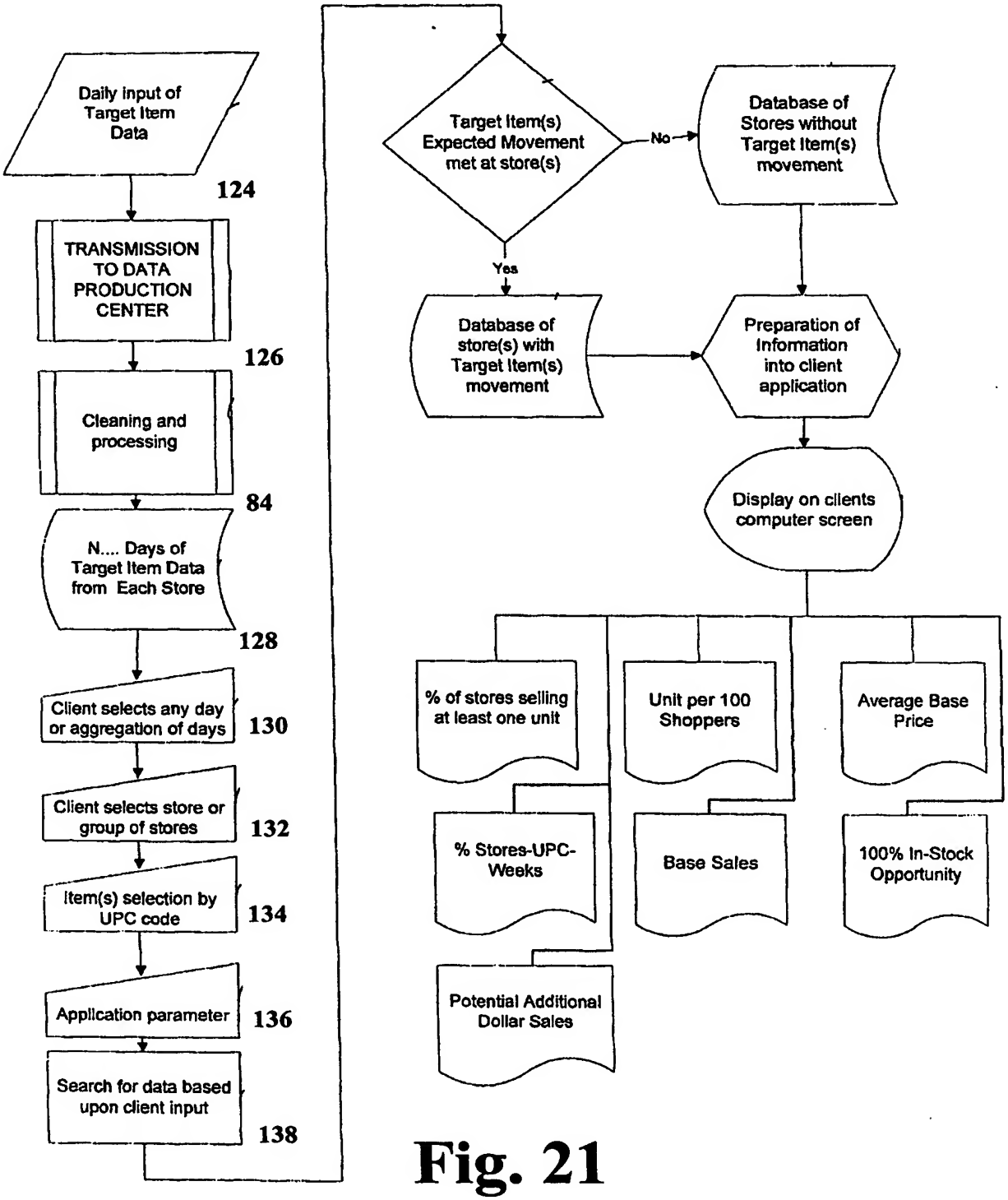

Daily input of Target Item Data
124
TRANSMISSION TO DATA PRODUCTION CENTER
126
Cleaning and processing
84
N.... Days of Target Item Data from Each Store
128
Client selects any day or aggregation of days
130
Client selects store or group of stores
132
Item(s) selection by UPC code
134
Application parameter
136
Search for data based upon client input
138
Target Item(s) Expected Movement met at store(s)
No
Database of Stores without Target Item(s) movement
Yes
Database of store(s) with Target Item(s) movement
Preparation of Information into client application
Display on clients computer screen
% of stores selling at least one unit
Unit per 100 Shoppers
Average Base Price
% Stores-UPC-Weeks
Base Sales
100% In-Stock Opportunity
Potential Additional Dollar Sales

Fig. 21

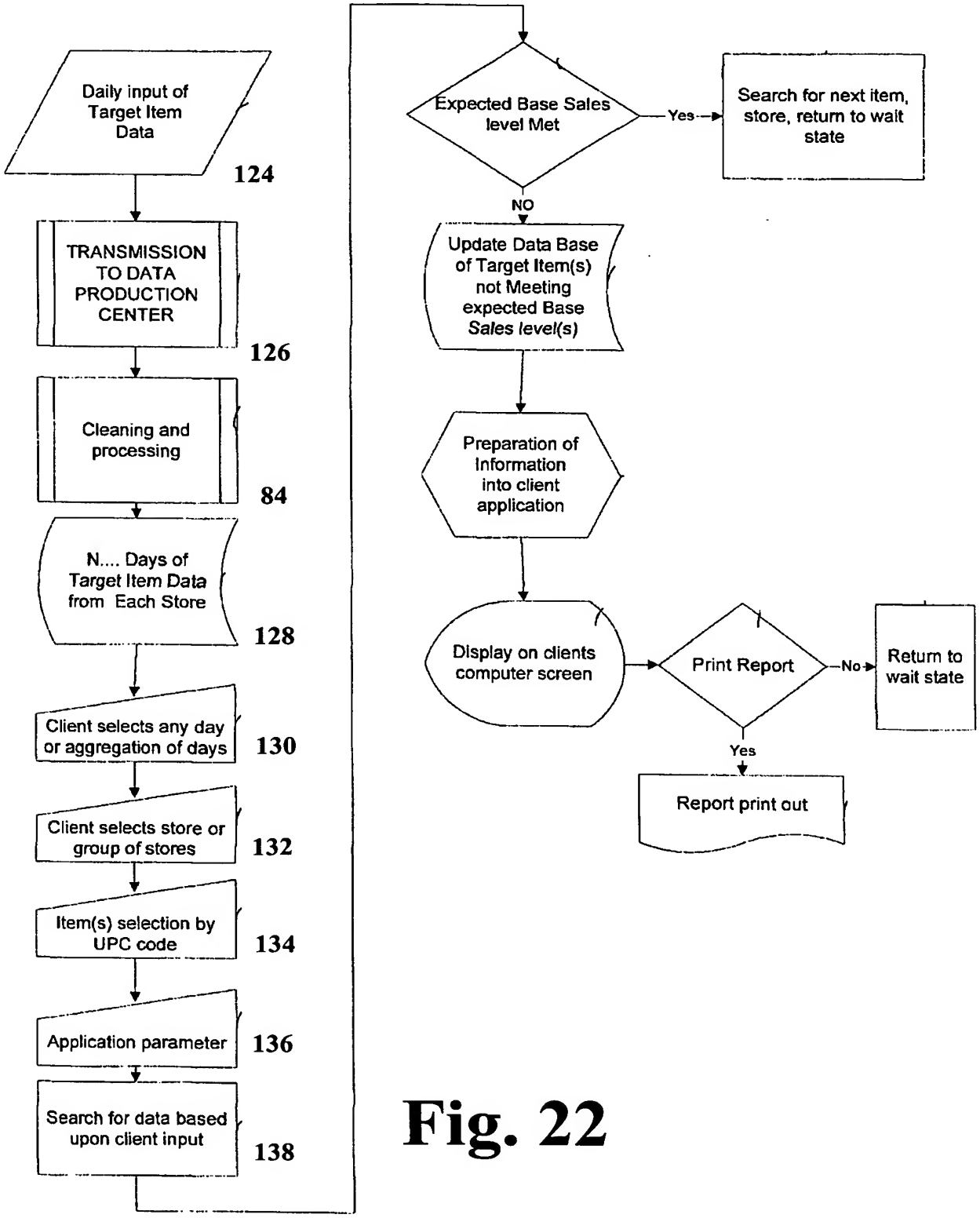

Daily input of Target Item Data
124
TRANSMISSION TO DATA PRODUCTION CENTER
126
Cleaning and processing
84
N.... Days of Target Item Data from Each Store
128
Client selects any day or aggregation of days
130
Client selects store or group of stores
132
Item(s) selection by UPC code
134
Application parameter
136
Search for data based upon client input
138
Expected Base Sales level Met
Yes
Search for next item, store, return to wait state
NO
Update Data Base of Target Item(s) not Meeting expected Base Sales level(s)
Preparation of Information into client application
Display on clients computer screen
Print Report
No
Return to wait state
Yes
Report print out

Fig. 22

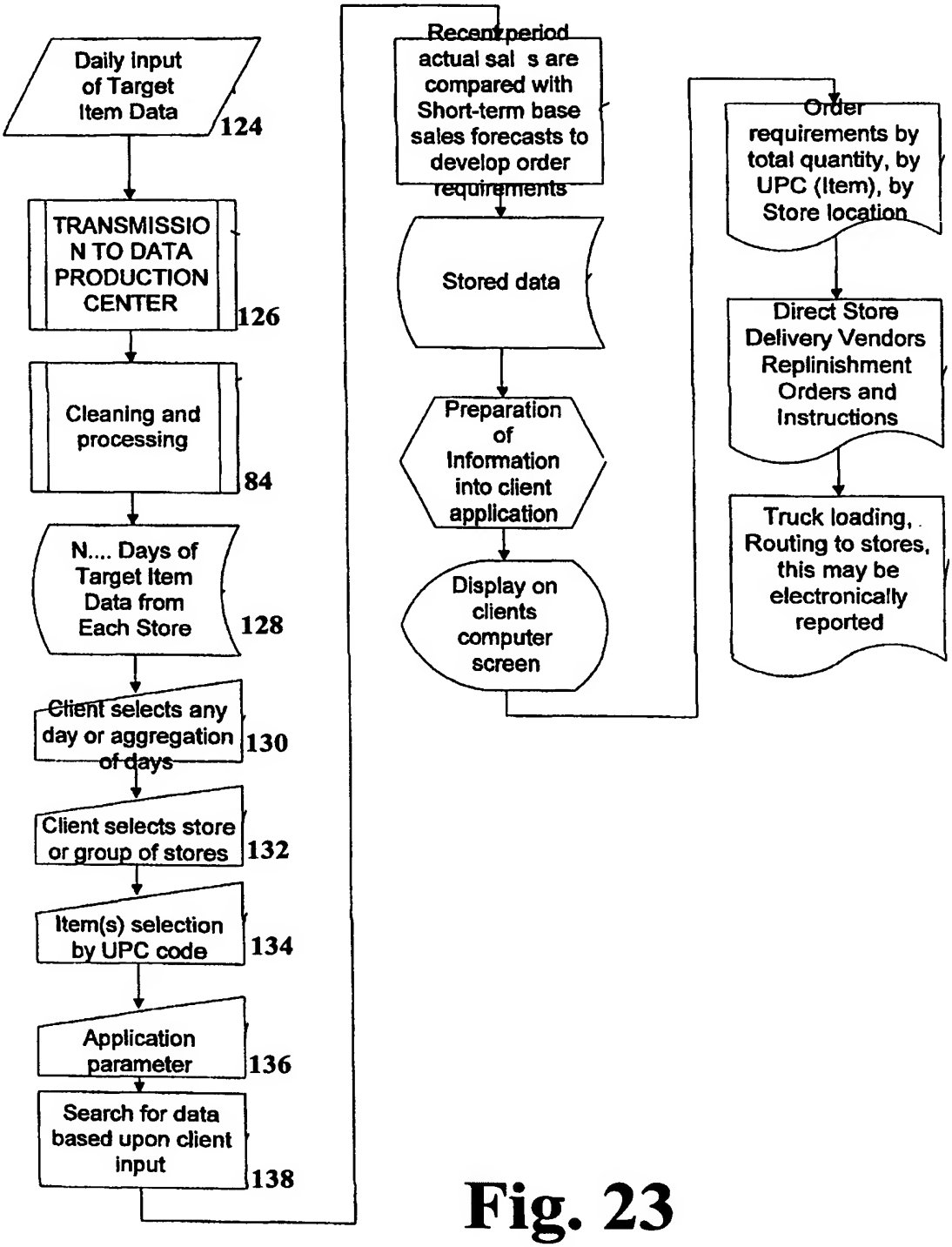

Daily input of Target Item Data
124
TRANSMISSIO N TO DATA PRODUCTION CENTER
126
Cleaning and processing
84
N.... Days of Target Item Data from Each Store
128
Client selects any day or aggregation of days
130
Client selects store or group of stores
132
Item(s) selection by UPC code
134
Application parameter
136
Search for data based upon client input
138
Recent period actual sal s are compared with Short-term base sales forecasts to develop order requirements
Stored data
Preparation of Information into client application
Display on clients computer screen
Order requirements by total quantity, by UPC (Item), by Store location
Direct Store Delivery Vendors Replinishment Orders and Instructions
Truck loading, Routing to stores, this may be electronically reported

Fig. 23

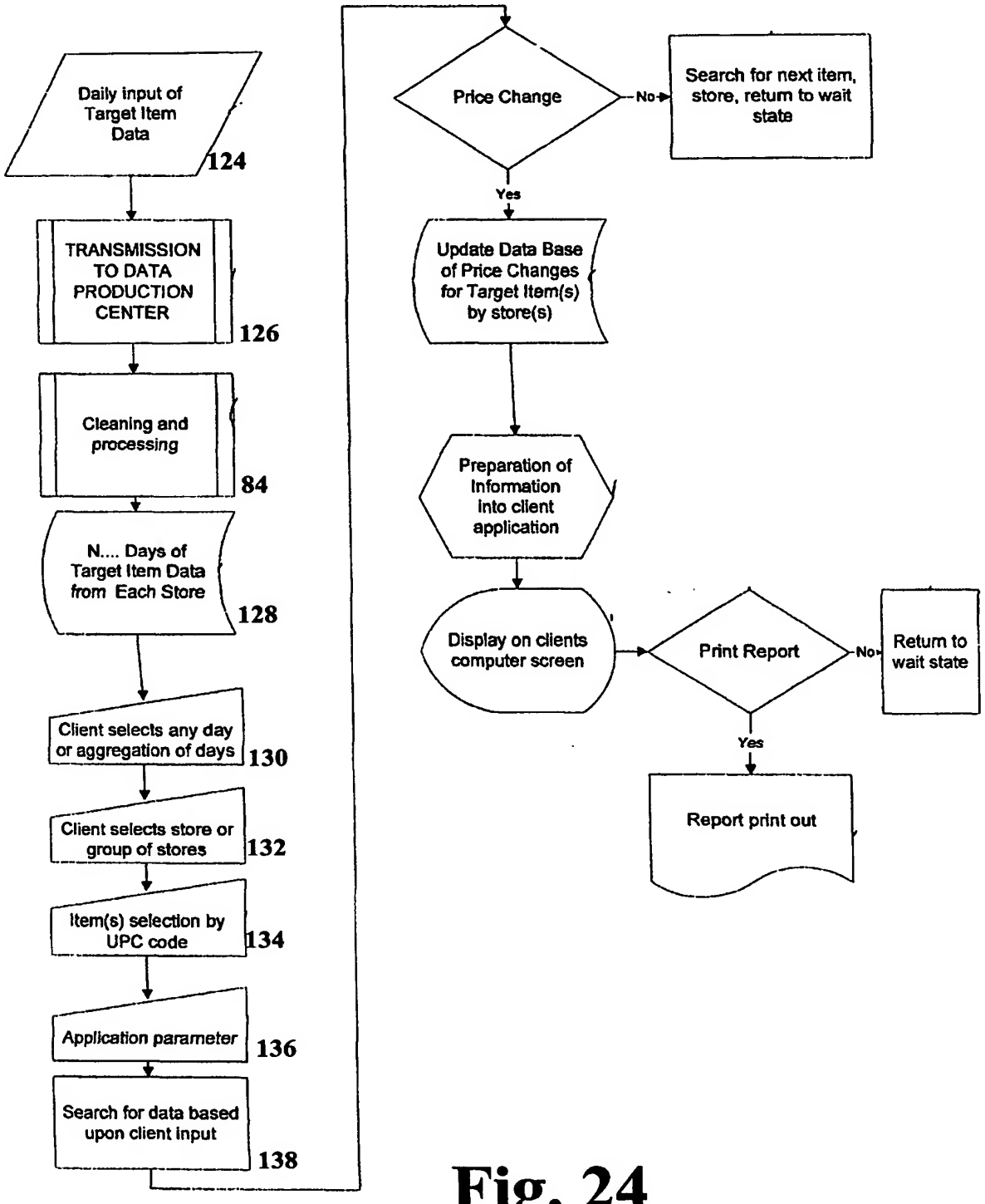

Daily input of Target Item Data
124
TRANSMISSION TO DATA PRODUCTION CENTER
126
Cleaning and processing
84
N.... Days of Target Item Data from Each Store
128
Client selects any day or aggregation of days
130
Client selects store or group of stores
132
Item(s) selection by UPC code
134
Application parameter
136
Search for data based upon client input
138
Price Change
No
Search for next item, store, return to wait state
Yes
Update Data Base of Price Changes for Target Item(s) by store(s)
Preparation of Information into client application
Display on clients computer screen
Print Report
No
Return to wait state
Yes
Report print out

Fig. 24

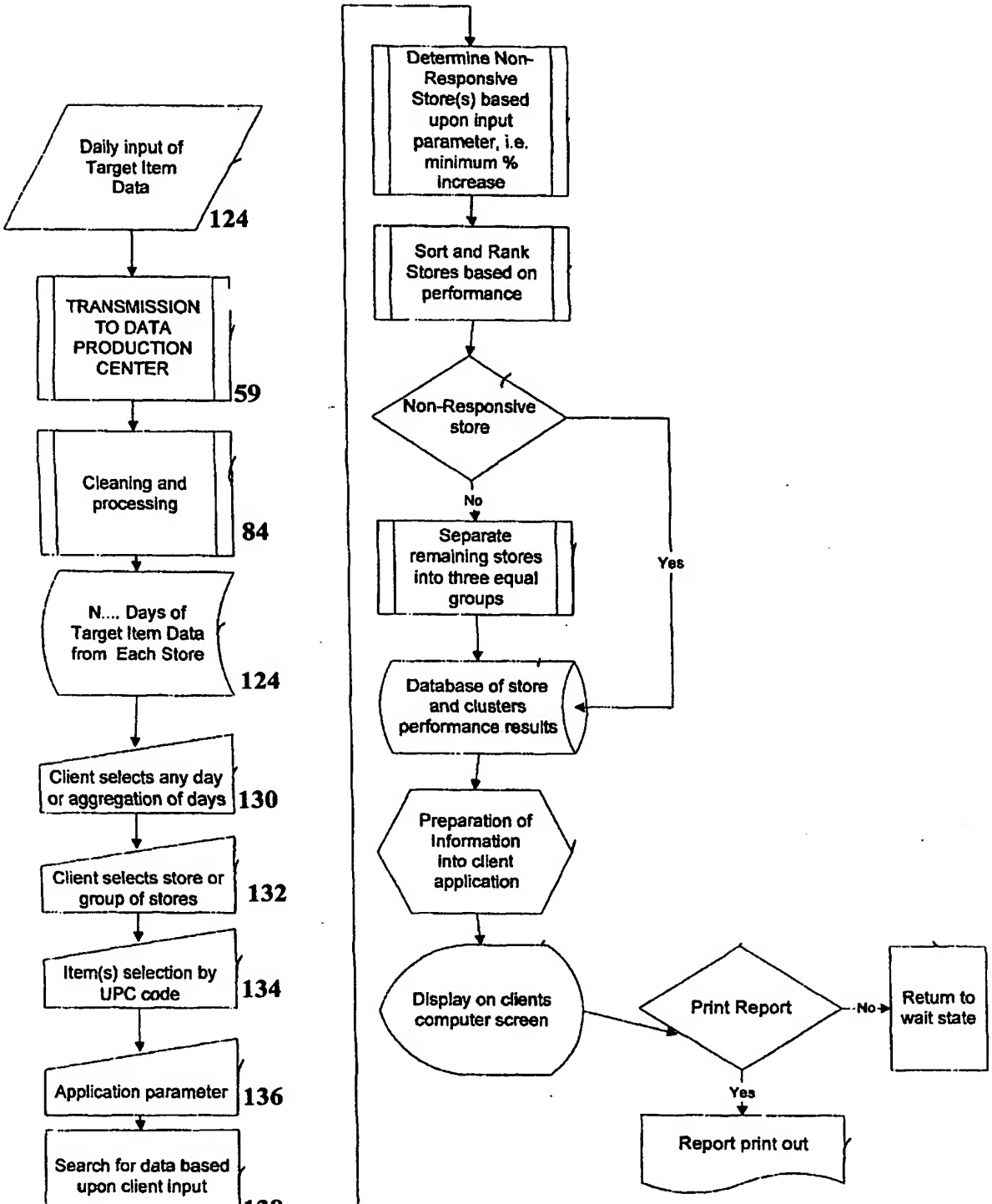

Daily input of Target Item Data
124
TRANSMISSION TO DATA PRODUCTION CENTER
59
Cleaning and processing
84
N.... Days of Target Item Data from Each Store
124
Client selects any day or aggregation of days
130
Client selects store or group of stores
132
Item(s) selection by UPC code
134
Application parameter
136
Search for data based upon client input
138
Determine Non-Responsive Store(s) based upon input parameter, i.e. minimum % increase
Sort and Rank Stores based on performance
Non-Responsive store
No
Yes
Separate remaining stores into three equal groups
Database of store and clusters performance results
Preparation of Information into client application
Display on clients computer screen
Print Report
No
Return to wait state
Yes
Report print out

Fig. 25

Store Item Record File Format

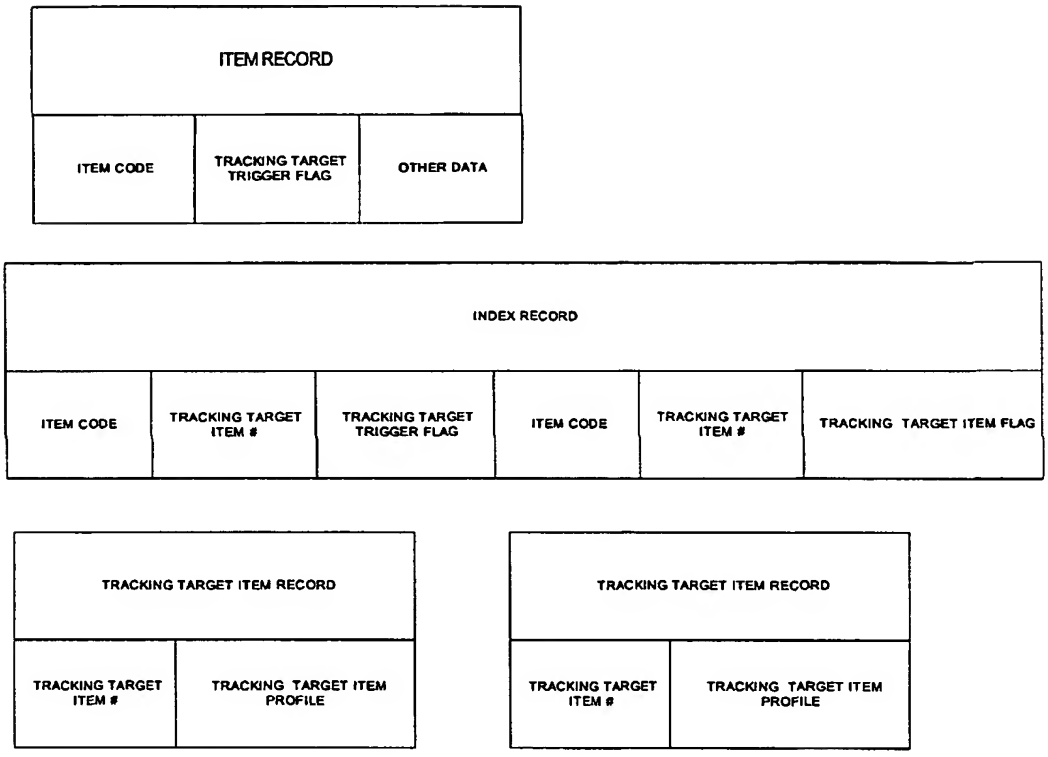


Fig. 26